

WHAT IS CLAIMED IS:

1. A medical apparatus for remodeling a mitral valve annulus adjacent to the coronary sinus, comprising:

an elongate body, having a proximal end and a distal end, the elongate body being movable from a first, flexible configuration for transluminal delivery to at least a portion of the coronary sinus to a second configuration for remodeling the mitral valve annulus; and

a forming element attached to the elongate body for manipulating the elongate body from the first delivery configuration to the second remodeling configuration;

wherein the elongate body in the second, remodeling configuration comprises at least a first curve which is concave in a first direction and a second curve which is concave in a second direction.

2. A medical apparatus as in Claim 1, wherein the body when in the second configuration comprises a third curve which is concave in the second direction.

3. A medical apparatus as in Claim 2, wherein the elongate body comprises a tube having a plurality of transverse slots therein.

4. A medical apparatus as in Claim 1, further comprising a lock for retaining the body in the second configuration.

5. A medical apparatus as in Claim 1, wherein the apparatus is movable from the delivery configuration to the remodeling configuration in response to proximal retraction of at least a portion of the forming element.

6. A medical apparatus as in Claim 1, wherein the apparatus is movable from the implantation configuration to the remodeling configuration in response to distal advancement of at least a portion of the forming element.

7. A medical apparatus as in Claim 1, wherein at least a first portion of the forming element extends within the body and a second portion of the forming element extends along the outside of the body.

8. A medical apparatus as in Claim 1, further comprising at least one anchor for engaging a site within a vessel.
9. A medical apparatus as in Claim 8, wherein the anchor comprises at least one barb for piercing the wall of the vessel.
10. A medical apparatus as in Claim 8, comprising a first tissue anchor at the proximal end and a second tissue anchor at the distal end.
11. A medical apparatus as in Claim 1, wherein the apparatus has an axial length of no more than about 10 cm.
12. A medical apparatus as in Claim 11, wherein the maximum cross sectional dimension through the apparatus is no more than about 10 mm.
13. An implant for positioning within a patient, comprising:
  - an elongate flexible body having a proximal section, a central section and a distal section;
  - a forming element extending through at least the proximal and distal sections of the body; and
  - a detachable coupling on the body, for removably attaching the body to a deployment catheter;

wherein manipulation of the forming element deflects the central section laterally with respect to at least a portion of the proximal and distal sections.
14. An implant as in Claim 13, wherein the body comprises a tubular wall.
15. An implant as in Claim 14, wherein the tubular wall is substantially noncompressible along a first side of the central section.
16. An implant as in Claim 15; comprising a plurality of voids in the wall along a second side of the central section, thereby permitting axial shortening or elongation of the second side.
17. An implant as in Claim 16 wherein at least some of the voids comprise slots through the wall, extending generally transverse to a longitudinal axis.
18. An implant as in Claim 17 comprising at least 10 transverse slots in the wall of the second side.

19. An implant as in Claim 18 comprising at least 20 transverse slots in the wall of the second side.

20. An implant as in Claim 13, wherein the forming element comprises an axially movable element.

21. An implant as in Claim 20, wherein the forming element comprises a pull wire.

22. An implant as in Claim 13, wherein manipulation of the forming element introduces a first curve in the central section of the body which is concave in a first direction, and at least a second curve in one of the proximal and distal sections of the body concave in a second direction.

23. An implant as in Claim 22, wherein manipulation of the forming element reshapes the body into a "w" configuration.

24. A method of manipulating the mitral valve, comprising the steps of:  
providing a catheter, having a prosthesis thereon, the prosthesis having a first tissue anchor and a second tissue anchor;  
inserting the catheter into the venous system;  
transluminally advancing the prosthesis into the coronary sinus;  
attaching the first and second tissue anchors to the wall of the coronary sinus;  
and  
manipulating the prosthesis to exert a lateral force on the wall of the coronary sinus in between the first and second tissue anchors.

25. A method as in Claim 24, further comprising the step of percutaneously accessing the venous system prior to the transluminally advancing step.

26. A method as in Claim 25, wherein the accessing step is accomplished by accessing one of the internal jugular, subclavian and femoral veins.

27. A method as in Claim 24, further comprising the steps of first measuring the coronary sinus and then selecting an appropriately sized prosthesis prior to the inserting step.

28. A method as in Claim 24, further comprising the step of measuring hemodynamic function following the manipulating step.

29. A method as in Claim 28, further comprising the step of determining an ongoing drug therapy taking into account the post implantation hemodynamic function.

30. A method of providing a therapeutic compressive force against a tissue structure which is adjacent to a vessel wall, comprising the steps of positioning a device in the vessel; rotating at least a part of a forming element within the device to cause a central portion of the device to travel laterally with respect to a proximal and a distal portion of the device, thereby exerting a force against the adjacent tissue structure; and deploying the device within the vessel.

31. A method as in Claim 30, wherein the positioning step is accomplished percutaneously.

32. A method as in Claim 30, wherein the tissue structure comprises the mitral valve annulus.

33. A method as in Claim 30, wherein the tissue structure comprises the left ventricle.

34. A method as in Claim 30, wherein the vessel comprises a vein.

35. A method of performing annuloplasty of the mitral valve comprising positioning a prosthesis in a curved portion of the coronary sinus; engaging a proximal tissue anchor and a distal tissue anchor on the device into tissue on an inside radius of the curve; manipulating a first portion of the device with respect to a second portion of the device to provide a compressive force on the inside radius of the curve in between the first and second anchors; and securing the device to maintain the compressive force within the coronary sinus.

36. A method as in Claim 35, further comprising the step of percutaneously accessing the venous system prior to the positioning step.

37. A method as in Claim 36, wherein the accessing step is accomplished by accessing one of the internal jugular, subclavian and femoral veins.

38. A method as in Claim 35, wherein the securing step comprises engaging a first threaded surface with a second threaded surface.

39. A method as in Claim 35, wherein the securing step comprises providing an interference fit.

40. A method as in Claim 35, wherein the securing step comprises providing an adhesive bond.

41. A method as in Claim 35, wherein the securing step comprises providing a knot.

42. A method as in Claim 35, wherein the securing step comprises providing a compression fit.

43. A method as in Claim 35, further comprising the steps of first measuring the coronary sinus and then selecting an appropriately sized prosthesis prior to the positioning step.

44. A method as in Claim 35, further comprising the step of measuring hemodynamic function following the manipulating step.

45. A method as in Claim 44, further comprising the step of determining an ongoing drug therapy taking into account the post implantation hemodynamic function.